Commonwealth of Kentucky
Division for Air Quality

PERMIT STATEMENT OF BASIS

PROPOSED TITLE V PERMIT NO. V-99-026
WESTLAKE PVC CORPORATION
CALVERT CITY, KY 42029

REVIEWER: KUMAR POLE, P.E.
PLANT I.D. # 21-157-00040

APPLICATION LOG # F851

A. SOURCE DESCRIPTION:

The Westlake PVC Corporation is a synthetic organic chemical manufacturing industry (SOCMI) falling under SIC Group 28. Polyvinyl chloride (PVC) is produced at this facility by polymerization of vinyl chloride monomer (VCM) in batch reactors. Following polymerization, the PVC slurry is sent to steam stripping columns to separate the PVC from unreacted VCM which is recycled back into the process. Following the stripping operation, the PVC resin is dried, screened and finally sent to one or more of 16 PVC storage silos. Several grades of PVC are produced at this facility and the finished product is shipped out of the plant by truck and rail transport. The facility is currently permitted for a maximum production rate of 750,000 tons of PVC per year.

B. PUBLIC AND U.S. EPA REVIEW:

On January 5, 2000, the public notice on availability of the draft/proposed permit and supporting material for comments by persons affected by the plant was published in the *Lake News* in Calvert City, Kentucky. The public comment period expired 30 days from the date of publication. During this time no comments were received from the general public.

Comments were received from Westlake on February 7, 2000. Attachment A to this document lists the comments received and the division's response to each comment. Minor changes were made to the permit as a result of the comments received, however, in no case were any emissions standards, or any monitoring, recordkeeping or reporting requirements relaxed. Please see Attachment A for a detailed explanation of the changes made to the permit.

Since comments were received from the facility during the public comment period, the permit now being issued is a proposed permit. U.S. EPA has 45 days from the date of the issuance of the proposed permit to comment on it. If U.S. EPA files no objection during this period, the proposed permit shall become the final permit.

ATTACHMENT A

COMMENTS FROM WESTLAKE
AND
DIVISION'S RESPONSE TO COMMENTS

Comments from Westlake PVC Corporation (Received February 7, 2000)

1. Permit Application Summary Form - In reviewing the table of actual and potential emissions, we find the need for a correction in the potential emissions of methanol. In a review of the current MSDS sheets for the insignificant source of these emissions, we have found that the Polyvic additives that contributes to these emissions may contain up to 4 percent methanol rather than the 2 percent reported in the older formulation. Based on the mix that is likely to be used for our different grades of PVC resin and result in maximum emissions, we estimate the potential emissions to be 0.15 tons per year. We request that this correction be made in the final determination and the Division's permit file records for this affected facility.

   Division Response - The division concurs with this comment and the Emissions Inventory System will be updated to reflect the revised emissions rates of methanol. No changes are necessary to the permit since no new applicable regulations are triggered as a result of the revised calculations. It is division policy not to re-issue Permit Application Summary Forms with the proposed permit, hence no changes are necessary to that form with this action.

2. Page 3 of 45, Section B, Boilers, Emission Points 15 (15) and 22 (22) - We request that the annual natural gas/process gas limitations in Condition 1.a. for both of the Boiler #1 and Boiler #2 be revised from 649,077,500 cubic feet/year to 881,045,750 cubic feet per year if only gas is used. We will not exceed the maximum amount of #2 fuel oil allowed by Condition 1b.

   Division Response - The division concurs with this comment. At the time these boilers were permitted, annual limits on natural gas usage were added to enhance compliance with the synthetic minor limits which these boilers were subject to. The division has now concluded that compliance with these synthetic minor limits is best determined through actual emissions data. Therefore, the division has eliminated the annual natural gas usage limit from the permit. Compliance with the true underlying standards (namely, the synthetic minor limits for NOx, SO_2, and particulate matter) will now be determined directly through actual emissions data. This will be accomplished through a revised compliance demonstration method for the emission limits. Item a. under **2. Emission Limits** (**Compliance Demonstration Method**) has been revised to the following form.

   "**Compliance Demonstration Method:** (For all three boilers)
   Mass Emission Limits:
   For particulate matter, NOx, and SO_2:
   a. For each boiler, burning only the fuels specified in this permit shall be deemed to be compliance with the applicable ~~emission~~ performance standards (lb/mmBTU limits).
   b. For each boiler, compliance with the annual particulate matter, NOx, and SO_2 emission limits (tons per year) shall be determined through the following formula:

      Actual Annual Emissions of $PM/PM_{10}/NOx/SO_2$ (tpy) =
      { [Amount of natural gas used per year x Emission factor for $PM/PM_{10}/NOx/SO_2$ (in lbs/ft^3 of natural gas)] + [Amount of fuel oil used per year x Emission factor for $PM/PM_{10}/NOx/SO_2$ (in lbs/gallon of fuel oil)] } / 2000 (lb/ton)

The permittee shall calculate and maintain records of the monthly emissions of $PM/PM_{10}/NOx/SO_2$ and the 12-month rolling total of emissions for each pollutant."

(*Comment 2 continued*) If lesser amounts of oil are used than the maximum permitted, we request that the limits for oil and natural gas be determined by the formula:

Natural or process gas used in cubic feet/year X emission factor for gas in tons NOx / cubic feet + Oil used in gallons per year X emission factor for oil in tons NOx/gallon = 19.95 tons/year.

We would use the emission factor from the last stack test for the gas and the AP-42 emission factor for fuel oil in this equation. Owing to the increased supplies of natural gas, we find that the possibility of curtailment is much reduced and actual oil usage only consists of an annual testing of the system readiness prior to the Winter heating season. The additional gas usage will provide greater flexibility to plant boiler operations.

Division Response - The division does not concur with this comment. The division agrees that the natural gas usage rate was originally limited to enhance compliance with the underlying standards (namely, the synthetic minor limits for NOx, SO_2, and particulate matter). With this permit action the division has determined that compliance with those emission limits is better determined through direct compilation of actual emission data. To this end, the division has eliminated the annual limit on natural gas usage from the permit and added a compliance demonstration method requirement to compile actual emissions data (see response to first part of Comment 2).

However, the division cautions Westlake against using natural gas in excess of that determined by the maximum rated capacity of Boilers #1 and #2 (98.5 mmBTU/hr) regardless of whether fuel oil is used during any 12-month period or not. Based on a heat capacity of 1021 BTU/ft^3, this works out to be 881,045,760 ft^3/year. The boilers are currently rated at capacities just below the trigger levels of 40 CFR 60 Subpart Db (100 mmBTU/hr). Using natural gas in excess of 881,045,760 ft^3/year at any boiler might imply that the maximum rated capacity of the boiler has exceeded 100 mmBTU/hr without complying with the requirements of 40 CFR 60 Subpart Db. Therefore, the changes requested by Westlake with this comment are denied. No changes were made to the permit as a result.

3. Page 3 of 45, Section B, Emission Points 15 (15) and 22 (22) - In conjunction with the operational flexibility requested under Comment 2 above, it is requested that the nitrogen oxide limits for Boilers #1 and #2 in Condition 2a, iii be both revised downwards from the 0.0577 lbs/mmBTU to 0.0462 lb/mmBTU. The performance test conducted in August 1998 that was witnessed by the KDAQ indicated an emission rate of 0.0363 lbs NOx/mmBTU for the low-NOx burner equipped units in these boilers. Westlake will accept a reduced hourly emission limit for the pollutant while staying below the annual NOx limit of 19.95 tons per year contained in Condition 2.c.iii. for Boiler #1 and #2, established as a synthetic minor limit in Permit F-94-017 (Revision 2).

Division Response - The division concurs with this comment. The NOx performance limit for Boilers #1 and #2 has been revised downwards from 0.0577 lbs/mmBTU to 0.462 lb/mmBTU.

4. Page 11 of 45, Section B, Process Equipment (Thermal Oxidizers) Emission Point 09 (09) - In condition 7, for each wet scrubber following the thermal oxidizers, under Subsection a., we request that the word "fan" be replaced by "scrubber' since a packed-bed scrubber may be used in place of a wet-fan-type scrubber. This will allow a higher control efficiency device to be used.

   Division Response - The division concurs with this comment. The requested change has been made to the permit since it does not relax any applicable emission standard or any monitoring, recordkeeping or reporting requirement.

5. Page 14 of 45, Section B, Pipeline Equipment, Emission Point 20 (20) - In Condition 6, for valves, it is requested that the requirements of 40 CFR 61.65 (b)8(ii) be included with 40 CFR 61.243-1. We request that "and 40 CFR 61.65(b)8(ii)" be inserted after "40 CFR 61.243-1" as the alternate emission standard. This will allow Westlake PVC to continue the current leak detection and repair program under 40 CFR 61.243-1, as implemented under the reduced monitoring frequency allowed by the past demonstration of good maintenance and less than 2% leaking valve rate through annual inspections. Under the regulations, Westlake has been able to demonstrate the applicability of the alternate monitoring frequency, including reporting requirements.

   Division Response - The division concurs with this comment. The requested change has been made to the permit since it does not relax any applicable emission standard or any monitoring, recordkeeping or reporting requirement.

6. Page 25 of 45, Section B, PVC Storage Silos, Emission Point 03 (03) - Under the Compliance Demonstration Method, we request deletion of subsection a. Mass Emission Standard which requires that the actual PM emission rate to be calculated using an emission factor observed during the last stack test. The baghouses provided on the dry PVC resin silos cannot be tested by reference stack test protocols. The units are positive pressure bin vents that do not have a stack or fan but passively filter the dust from the conveying air (1420 scfm maximum based on blower capacity), allowing the filtered air to leave the bin vent in intermittent fugitive fashion from the top opening based on when material is conveyed to each silo. Reference Method 5 is not applicable nor is the air flow likely to exist over the entire period necessary to perform a reference method test due to the intermittent loading as needed. The assurance of compliance with the particulate emission limitation in the permit (0.15 lbs/hr) may be demonstrated through visual observation of each bin vent daily while in operation. We request that this be considered the compliance demonstration method with appropriate additions to the monitoring and recordkeeping requirements.

   Engineering analyses also support this approach as long as regular preventive maintenance and daily observation indicate normal operation. For fabric filters with no visible emissions, engineering, experience and testing has indicated that a mass emission rate below 0.005 grains per dscf. Based on a conservative assumption of double this rate (0.01 grains per dscf), a

common manufacturers warranty for fabric filter units, the silo emission rate would be 1420 dscf x 60 min/hr x 0.01 gr/dscf/7000 gr/lb or 0.12 lbs per hour, below the allowable emission rate of 0.15 lbs/hr. Since the silos are only loaded intermittently, with daily observations of visible emissions and prompt maintenance, records of the daily observation of the bin vent visible emissions can adequately demonstrate compliance with the mass emission limits. Compliance with annual limits can also be demonstrated based on the Specific Monitoring Requirements of Condition 4b and Specific Recordkeeping requirements under Condition 5b.

Division Response - The division concurs with this comment. Given the technical infeasibility of performing a stack test on the Storage Silos, the Compliance Demonstration Method for the Mass Emission Limits has been changed. Previously, a daily visible observation was required only under malfunction conditions. With this permit action, the permittee is now required to monitor and maintain records of the visible emissions from the silo stacks on a daily basis. Since visible emissions are closely tied with particulate mass emissions, the division has determined that this method of compliance demonstration is equivalent to that previously proposed and does not represent a relaxation of the underlying emission standard.

7. Page 26 of 45, Section B, PVC Storage Silos, Emission Point 03(03) - Based on the reasons stated above in Comment 6, we also request that the stack testing requirement under Condition 3a and 3b be deleted as impractical for the positive pressure bin vent control devices used on the silos.

   Division Response - The division concurs with this comment. Based on the changes to the permit documented in the division response to Comment 6, the particulate matter testing requirement has been deleted.

8. Page 26 of 45, Section B, PVC Storage Silos, Emission Point 03(03) -We request that Condition 4a and 5a require monitoring and recordkeeping of the throughput of dry PVC for each silo rather than the dry PVC amount loaded. We are able to determine the amount loaded out but find it impractical to determine the amount loaded in due to the continuous conveyance by pneumatic means from the dryers to the silo. Since the amount loaded out will equal the amount blown in, we believe this will provide the monitoring and recordkeeping for demonstrating compliance.

   Division Response - The division concurs with this comment. The requested change has been made to the permit since it does not relax any applicable emission standard or any monitoring, recordkeeping or reporting requirement.

9. Page 28 of 45, Section B, PVC Railcar Loading, Emission Point 06(06) - We request that Condition 2c. requiring a dust collection system in addition to the heavy curtains in Condition 2a. and the wet suppression system Condition 2b. be deleted. The conditions under 2a. and 2b. ensure compliance with the opacity and reasonable precaution requirements of 401 KAR 63:010. We are investigating future improvements that will reduce labor and reduce dust generation. These may not necessarily involve dust collection but rather, dust prevention. Therefore, in order to allow such measures to be used, we request that 2c. be replaced with the wording “The

permittee may use any other methods to reduce dust from the loading operation if shown to the Division's satisfaction as being equivalent to the above".

Division Response - The division concurs with this comment. The requested change has been made to the permit since it does not relax any applicable emission standard or any monitoring, recordkeeping or reporting requirement.

10. Page 42 of 45, Section G - In Condition (d) 1, we request that the pipeline equipment reference in Emission Point 20 but associated with the units to be constructed be specifically shown by adding "EP20 - Pipeline Equipment associated with EP03, 09, 34, 35, 52, 44, 45, 53, 54." This will ensure that the requirements for EP-20 apply to these units after construction.

    Division Response - The division concurs with this comment. The requested change has been made to the permit since it does not relax any applicable emission standard or any monitoring, recordkeeping or reporting requirement.

11. Page 43 of 45, Section G - In Condition (d) 6e, we request addition of the following wording "If the EP# 34-36 dryers are identical and operate under similar parametric conditions as the EP#33 dryer, the Division may allow the compliance demonstration stack test for EP# 33 to be used for demonstrating compliance with the mass emission limit".

    Division Response - The division concurs that testing for any one of the new dryers is sufficient provided that the dryers are identical and will operate under similar conditions.